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X. *Some Observations on the Cicada of North America, Collected by Mr. P. Collinson, F. R. S.*

London Nov. 2, 1763.

Read Feb. 23, 1764. IN Pennsylvania the Cicada is seen annually, but not in such numbers as to be remarkable; but at certain periods, of 14 or 15 years distance, they come forth in such great swarms, that the people have given them the name of *Locusts*. About the latter end of April these Cicadæ come near the surface: this is known, by the hogs routing after them. They creep out of the ground, near the roots of trees, in such numbers, that in some places, the earth is so full of holes, it is like an honey-comb.

Their first appearance is an hexapode (an ill-shaven grub) with six feet. This is their middle or nymph state: they creep up every thing near them, and fix their claws fast, on the shrubs, and bark of trees: then the skin on its back bursts open, and the fly comes forth, disengaging itself by degrees, leaving the case or exuviae behind, in the exact shape, in which it was before occupied.

At first coming out, the Cicadæ are all white, with red eyes, and seem weak, and tender; but next day they attain to their full strength and perfection, being of a dark brown colour, with four finely-veined transparent wings, as will be better seen, than described, by the specimens before you. [TAB. VIII.]

They come forth out of the ground in the night ; being then secure from being disturbed by so many creatures, that prey on them, whilst they are under the operation of exchanging one state for another. From the tenth of May to the fifteenth, they are observed to be spread all over the country.

As soon as the dew is exhaled, the Cicadæ are very active, flying about from tree to tree. The male makes a singing noise, calling the female, which he effects by a tremulous motion he gives to two bladders, filled with air, under his wings. From their numbers the noise is so loud and troublesome, that it interrupts conversation with a continual dinn, from morning to evening. They continue coupling to the sixteenth of May : soon after the males disappear, and the females lay their eggs. They are much larger than the males.

They never could be perceived eating any thing ; yet, as they are furnished with a long proboscis, which they frequently extend, they may suck the dews, or the farina of flowers.

The male, in coupling, hath, at the end of his tail, two hooks, with which he enters between the rings, that surround the body of the female. These, spreading internally, confine them long together ; which may be requisite, as there is a great number of eggs to impregnate, some say six or seven hundred.

Soon after this work is over, the female begins laying her eggs. To assist her in this operation, she is armed with a dart near half an inch long, fixed between her breast and belly, and which extends to the end of

of her tail. This she sheaths up, when it is not in use: with this dart she pierces the small twigs of trees, and, at the same time, injects an egg. The darted twigs, that lie before you, will better shew the manner, than I can describe it.

It is surprising to see how quick they penetrate into hard wood, and croud it full of eggs, the length of two or three inches, ranged in a line close together, from twelve to eighteen in each partition. How she deposites the eggs in this direction, it was difficult to discover, they are so very shy whilst about this work: but my ingenious friend John Bartram, observing her, in the beginning of this operation, took a strong woody stalk of a plant, and, presenting it to her, she directly fell to work upon it, as he held it in his hand. It was very wonderful to see how dexterously she worked her dart into the stalk, at every puncture dropping an egg. This was seen very distinctly, as she did not touch the stalk with any other part of her body.

The Cicadæ fix on most sort of trees, but like best the oak and chesnut, which are the twigs before you, and the sassafras, and all orchard trees.

They always dart to the pith of the branch, that, when the egg hatcheth, the little insect may find soft food in its infant state. When mature, they creep forth, go down the tree, or drop off, and soon make their way into the ground, where they have been found two feet deep. Here they find a secure repose, untill they have passed through their changes, from a magot to an hexapode, and lastly to a fly.

July 15th and 16th they were perceived coming forth: several darted twigs were perceived, and care-

fully examined, and opened: some eggs were hatched, others not mature, of a dull brown colour. These were taken out, and spread on a table; in about an hour the eggs cracked. It was very entertaining to observe, how the little insect contrived to disengage itself, from the shell. When it was got clear from its incumbrances, it run about, very briskly, seeking a repository in the earth.

Some General Remarks.

These Cicadæ are spread all over the country in a few days; but, being the prey of so many animals, their numbers soon decrease, and, their duration by the order of nature being short, quickly disappear.

They are the food of most kind of domestic and wild fowl, and many beasts: even the squirils grow fat with feeding on them.

And one of the repasts of the Indians, after having first plucked off their wings, is to boil and eat them.

There are two distinct species of Cicadæ in North America; the one here described being much larger than the other.

The lesser species has a black body, with golden eyes, and remarkable yellow veined wings.